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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,652	10/20/2003	Glenn Harrison Chapman	C525 0344 GNM/TAR/bds	1836

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EXAMINER	
MOHAMEDULLA, SALEHA R	
ART UNIT	**PAPER NUMBER**
1756	

DATE MAILED: 11/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/687,652	CHAPMAN ET AL.	
	Examiner	Art Unit	
	Saleha R. Mohamedulla	1756	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *102003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claims 1-16 are pending.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1-16 are rejected under 35 U.S.C. 102(e) as being anticipated by US# 5,998,066 to Block et al.

Block teaches a method of making an inorganic chalocogenide glass resist to produce a gray scale mask (col. 2, lines 64-66). As shown in FIG. 1, the process of making the gray scale mask with an inorganic chalcogenide resist is started by deposition of a Se--Ge film 102 upon a transparent substrate 100, such as quartz or fused silica glass (col. 6, lines 25-30). The inorganic film 102 may also be composed of other chalcogenide glasses, such as Se-S-GE, Se-Te-Ge or Se-Sn-Ge. Deposition of Se-Ge film 102 can be performed by vacuum evaporation or RF sputtering. A thin Ag layer 104 is deposited over the Se—Ge film 102, as shown in FIG. 2 (col. 6, lines 39-43). Therefore, Block teaches creating an inorganic resist comprising depositing a first layer of inorganic material on a substrate and depositing one or more layers of another

inorganic material. One method of depositing the silver layer 104 is through immersion of the substrate 100 into an aqueous solution of $AgNO_3$. The gray scale pattern, using a combination of pulse width and density modulation is directly written on the silver layer 104 with an electron beam 106, as shown in FIG. 3 (col. 6, lines 44-46). Therefore, Block imagewise exposure of the layers with an electron beam. The e-beam writing causes Ag diffusion into the Se-Ge film 102, creating an Ag-Se-Ge film 108 at the irradiated areas, as shown in FIG. 4 (col. 6, lines 55-60). The Ag-Se-Ge film 108 is insoluble in alkaline solutions. As shown in FIG. 5, the Ag layer 104 on the non-irradiated areas is removed by etching with an acid solution (col. 6, lines 60-65). Therefore, Block teaches that the exposure creates a resultant material with different etching characteristics from the unexposed layers, because Block teaches that only the non-irradiated areas are responsive to the acid etch step. Block teaches that the non-irradiated portions are made of Ag and Se-Ge, therefore, Block teaches that the unexposed materials are metals. An Ag-Se-Ge film 108 is left on substrate 100, creating a gray scale Se-Ge mask 109 (col. 7, lines 1-5). Block also teaches exposure with a light source (col. 7, lines 10-15), therefore, Block teaches the radiation is in the deep UV to infrared range. The method steps recited in claims 4, 5, 7 and 9 do not materially limit the structure of the photomask, as the claims are product-by-process claims.

2. Claims 1-16 are rejected under 35 U.S.C. 102(b) as being anticipated by US# 4,082,861 to Izu et al.

Izu teaches a continuous tone dry process imaging resist film. It comprises a substrate 10 and also the film 11 of dispersion imaging material, as shown in Figure 11 (col. 15, lines 30-35).

The film 11 which is deposited on the substrate 10 includes a plurality of grains 25 which are substantially vertically oriented with respect to the substrate 10 and which have dome shaped ends 26 and substantially vertically oriented grain boundaries 27 between. The deposited grains 25 are formed of bismuth and the outer surfaces of the grains 25 and the grain boundaries 27 therebetween include bismuth oxide as indicated at 28 (col. 15, lines 35-45). The film has high optical density and is substantially opaque (col. 15, line 46). The substrate 10 may be provided with a layer of aluminum oxide before the grains 25 are deposited thereon. The thin layer 31 of aluminum oxide which is substantially island like in configuration operates to bond the grains 25 in their solid state (col. 15, lines 53-58). Then, the structure is heat treated or annealed to within a temperature range of about 100-180 degrees. This heat treating or annealing of the imaging film causes an increased bonding between the film 11 of dispersion imaging material and the substrate 10 and/or overcoat film (col. 16, line 60 – col. 17, line 5). When sufficient energy is applied to the imaging film illustrated in FIG. 11 to cause the absorbed energy to increase in the film 11 of dispersion imaging material, the film 11 is changed to a substantially fluid state wherein the surface tension of the material acts to cause the film where subject to the applied energy to disperse and change to the discontinuous film comprising openings 18 and deformed material 19 (col. 10-25). The openings usually begin to form at some of the phase boundaries between the bismuth grains 25 and the oxides 28 as indicated at 30 in FIG. 11.

Izu teaches that the substantially opaque film of dispersion imaging material 11 may be a vacuum deposited alloy, having an eutectic in its system, of a plurality of substantially mutually insoluble solid components having an excess of at least one of the components so that the alloy is off the eutectic of the alloy system (col. 6, lines 48-55). The alloy has a low eutectic melting

temperature (col. 6, lines 60-65). Therefore, Izu teaches depositing a first layer of inorganic material, depositing another layer of inorganic material and imagewise exposing the layers. Izu also teaches that the exposure creates a eutectic alloy of the unexposed materials, because layer 11 is a eutectic. A eutectic alloy is an alloy that has a melting point below the materials that the alloy contains, as defined in the instant specification. It is inherent that the melting point of the eutectic of the bismuth and the bismuth oxide is below 300 degrees. The bismuth/bismuth oxide eutectic has both exposed and unexposed portions and is made of metals. Therefore, the eutectic has at least 5 percent of one of the exposed materials, as recited in present claim 6. In Figure 1, Izu teaches optical density of the layer 11 varying with exposure. When intensity is applied, if the energy is below a threshold level, imaging will not take place. If the energy is above the threshold level, the optical density will go from 1.2 to 0.2 (col. 11, lines 49-67). Izu teaches that after imaging, the layer 11 goes from substantially opaque to transparent. Therefore, Izu teaches that the resultant material has optical transmission characteristics different from any of the unexposed materials of the eutectic. Since the resulting material becomes substantially transparent after exposure, they can be readily detected with optical radiation, that is, light. A visible image on the substrate surface will be created because the unexposed areas are substantially opaque and the exposed areas are substantially transparent. Izu also teaches that the alloy can contain bismuth and lead (claims 37 and 38). The method steps recited in claims 4, 5, 7 and 9 do not materially limit the structure of the photomask, as the claims are product-by-process claims.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-16 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-31 of U.S. Patent No. 6,641,978. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the patent encompass the present claims.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Saleha Mohamedulla whose telephone number is (571) 272-1387. The Examiner can normally be reached Monday-Friday, from 8:00 AM to 4:30 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Mark Huff, can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Saleha R. Mohamedulla

Patent Examiner

Technology Center 1700
November 29, 2004